<table>
<tr><td>Skill:</td><td>Observing closely</td></tr>
<tr><td>Description:</td><td>Observation is the acquisition of data through experimentation or looking at the pupil’s surroundings. Observation is critical for collection of data and a prerequisite to recording data. Observation is present in any scientific experiment.</td></tr>
<tr><td>Where it sits is– progression of skills Prerequisties...</td><td>In order to observe successfully, children need to have developed the skills of using equipment - this might through using magnifying glasses, thermometers, rulers and/or with focus direction from the teacher as to what to observe.</td></tr>
<tr><td>Vocab development</td><td>KS1 Using observations to make generic statements about an object.
LKS2 Using systematic observations to give detailed descriptions of objects and compare the subtle differences between them.
UKS2 Deciding which observations to make so that an experiment can be replicated by others.</td></tr>
<tr><td>I can statements related to the w/s skill</td><td><table><tr><td>KS1</td><td>LKS2</td><td>UKS2</td></tr><tr><td>I can observe closely to describe an object</td><td>I can use my observations to make comparisons between different things</td><td>I can decide what observations to make</td></tr></table></td></tr>
<tr><td>Suggested question scaffolds</td><td>What do you see?
What colour/size/shape is that?
Can you describe that for me?
How is that different from that?
How is that the same as that?
What words could you use to describe what is happening there?
What do you notice that is the same about these...?
What difference do you notice between these things that look the same?</td></tr>
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Skill:	Taking measurements

<table>
<tr><td>Description:</td><td>In science, a measurement is a type of data. It can be qualitative (categoric) or quantitative (continuous) in nature. Initially pupils can take nonstandard measurements e.g. one cup, but as they progress move to standard measurements such as litres or kilos.</td></tr>
<tr><td>Where it sits is– progression of skills Prerequisties...</td><td>In order to measure successfully children, need to have developed the skills of using equipment - this might through using equipment in maths lessons such as rulers or mirrors etc. Or scientific equipment such as microscopes, pipettes and burettes.</td></tr>
<tr><td>Vocab development</td><td>KS1 Use simple measurements and non-standard units.
LKS2 Use standard units in your measurements.
UKS2 Decide what measurements to use.</td></tr>
<tr><td>I can statements related to the w/s skill</td><td>
<table>
<tr><th>KS1</th><th>LKS2</th><th>UKS2</th></tr>
<tr><td>I can use simple equipment to make measurements</td><td>I can use different equipment to measure accurately in standard units.</td><td>I can decide what measurements to make using a variety of scientific equipment including data loggers and thermometers</td></tr>
</table>
</td></tr>
<tr><td>Suggested question scaffolds</td><td>What units do we use to measure that?
What do you notice that is the same about these measurements?
What are you measuring and why?</td></tr>
</table>

<table>
<tr><td>Skill:</td><td>Asking scientific questions</td></tr>
<tr><td>Description:</td><td>Asking questions is about supporting the pupils to illicit their ideas that they want to investigate. The investigative question is based on a scientific principle. Pupils should be able to construct a prediction. When supporting pupils to construct your own questions your prompts should direct students to form an investigation.</td></tr>
<tr><td>Where it sits is– progression of skills Prerequisties...</td><td>Children need to be able to ask investigable questions before they can plan an enquiry. They also need have seen examples of questions and command words. The children should have seen examples of other scientific questions.</td></tr>
<tr><td>Vocab development</td><td>KS1 Explore/ identify patterns.
LKS2 Ask topic specific questions.
UKS2 Develop a line of enquiry.</td></tr>
<tr><td>I can statements related to the w/s skill</td><td><table><tr><td>KS1</td><td>LKS2</td><td>UKS2</td></tr><tr><td>I can ask simple questions that look for patterns in observations</td><td>I can ask questions linked to a specific topic</td><td>I can construct new investigative questions based on initial results I obtain</td></tr></table></td></tr>
<tr><td>Suggested question scaffolds</td><td>What would you like to know about....?
Having done x what would you now like to know?
What is your question?
What will you need to do to find out?</td></tr>
</table>

<table>
<tr><td>Skill:</td><td>Planning an enquiry</td></tr>
<tr><td>Description:</td><td>Children look at all the different elements that they need to consider in order to set up an enquiry. Children can use simple planning grids to support the structure of the investigation.</td></tr>
<tr><td>Where it sits is– progression of skills Prerequisties...</td><td>Children need to be able to ask investigable questions before they can plan an enquiry. They also need have seen examples of scientific questions.</td></tr>
<tr><td>Vocab development</td><td>KS1 Experience
LKS2 Decide what to measure and how frequently
UKS2 Control variables</td></tr>
<tr><td>I can statements related to the w/s skill</td><td>
<table>
<tr><th>KS1</th><th>LKS2</th><th>UKS2</th></tr>
<tr><td>I can recognise that questions can be answered in different ways.</td><td>I can plan different types of enquiries

I can suggest improvements and raise further questions</td><td>I can plan different types of scientific enquiries to answer questions.

I can use results to make predictions and set up more tests (including fair tests)</td></tr>
</table>
</td></tr>
<tr><td>Suggested question scaffolds</td><td>What would you like to do/find out?
What do you think will happen if your idea is correct?
What do you think will happen if...or when...?
What do you think will make this go?
What do you think the answer will be?
What do you think will happen?
Can you think of another way of doing that?
How could you answer that question?
How could you improve the way that you measured that?
How will you make it fair?</td></tr>
</table>

Skill:	Using equipment

<table>
<tr><td>Description:</td><td>Using a range of equipment to support the development of specific skills. This entails the children using the equipment themselves and not the teacher. Dependent on the investigation this can vary in the number of pieces and expectations of how these might be used.</td></tr>
<tr><td>Where it sits is– progression of skills Prerequisties...</td><td>Children need experience of using equipment before looking at a specific skill for example observation. Children need time to explore and understand how to use magnifying glasses, thermometers etc before using them to observe or measure.</td></tr>
<tr><td>Vocab development</td><td>KS1 Use simple equipment to make nonstandard measurements
LKS2 Choose most appropriate equipment from a range provided
UKS2 Use knowledge of measurements to justify the choice of equipment</td></tr>
<tr><td>I can statements related to the w/s skill</td><td><table><tr><th>KS1</th><th>LKS2</th><th>UKS2</th></tr><tr><td>I can use simple equipment to make measurements</td><td>I can use different equipment to measure accurately</td><td>I can select the most appropriate equipment</td></tr></table></td></tr>
<tr><td>Suggested question scaffolds</td><td>What equipment do you want to use?
What will that measure?
How will you measure that?
Can you think of a better piece of equipment to use?</td></tr>
</table>

Skill:	Gathering and recording results
Description:	Gathering and recording data or results from an investigation enables children to show what they have found out in their experiment.
Where it sits is– progression of skills Prerequisties...	Children need to be able to use equipment, understand how to measure and observe before looking at gathering and recording data.
Vocab development	KS1 Record simple data in scaffolded table/chart

<table>
<tr><td></td><td>LKS2 Record data as their own, bar charts, tables, drawings, labelled diagrams, keys, classification keys, scatter graphs, bar/line graphs
UKS2 Create tables to record data including repeat readings.</td></tr>
<tr><td>I can statements related to the w/s skill</td><td>
<table>
<tr><th>KS1</th><th>LKS2</th><th>UKS2</th></tr>
<tr><td>I can complete a pre prepared table to record my data</td><td>I can gather and record data in different ways including drawings, labelled diagrams, keys, bar charts, scatter graphs, line graphs and tables.</td><td>I can decide how to record data and results.

I can use scientific diagrams, labels, classification, keys, tables, scatter, bar and line graphs.</td></tr>
</table>
</td></tr>
<tr><td>Suggested question scaffolds</td><td>What is the best way to show what you have found out?
How will you record your results?
To display these results is it better to use a line graph or bar graph?
How are you going to keep a record of what you do and find?
What kind of chart/graph/drawing do you think it is the best way to show the results?
How will you adapt your results table to record repeat measurements?</td></tr>
</table>

<table>
<tr><td>Skill:</td><td>Drawing conclusions, making predictions and evaluating on enquiry</td></tr>
<tr><td>Description:</td><td>Children identify patterns in the data they have collected in their experiment. Pupils review the way they collected data suggesting improvements to their experiment and explaining how this impacts the conclusions they can make.</td></tr>
<tr><td>Where it sits is– progression of skills Prerequisties...</td><td>In advance of this skill children must have completed the experiment. Children need exposure to all other skills; hence this skill is not developed until KS2.</td></tr>
<tr><td>Vocab development</td><td>KS1 Children at KS1 are not expected to develop this skill
LKS2 Spot patterns which inform the conclusions made.
UKS2 Describe/explain causal relationships.</td></tr>
<tr><td>I can statements related to the w/s skill</td><td>
<table>
<tr><th>KS1</th><th>LKS2</th><th>UKS2</th></tr>
<tr><td>Not developed at this key stage</td><td>I can interpret observations and other data including identifying patterns and trends.

I can use appropriate scientific language</td><td>I can identify causal relationships between distinct variables.

Make inferences and draw conclusions</td></tr>
</table>
Conclusion and analysing results:
<table>
<tr><th>KS1</th><th>LSK2</th><th>UKS2</th></tr>
<tr><td>Not developed at this Key Stage</td><td>I can use my results to: draw simple conclusions; make predictions; suggest improvement; raise further questions.

Suggested question:
What have you found out?</td><td>I can identify and evaluate scientific evidence (my own or others’) that has been used to support my conclusions.

Suggested question:
How do you know?</td></tr>
</table>
</td></tr>
</table>

Suggested question scaffolds	Will that answer your question? Why do you think this will happen? Can you answer your question for me? What do your results show? What do you think these results tell you? What bit of evidence did you use to answer your question? Was your prediction correct? Can you see any pattern in your results? Can you spot any connection between … and … ? Can you spot any surprises in the evidence? Using your results if I … what would happen to … ? Can you use all the evidence to answer the question? Is there any evidence you cannot use to answer the question? Was one bit of evidence better than another? Could your findings be used to answer another question? How did what you found compare with what you expected? Did you find any connection between..... and.....? What did you find makes a difference to how fast/far/many.....? How does your result help you to answer your question? What do you think is the reason for....? What other conclusions can you draw from your results? How can you show that (evidence) your conclusion is right? If you did this again what would you change to make it better?